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Description of new moths which settle on man and animals in S. E. Asia (genera *Thliptoceras*, *Hemiscopis*, *Toxobotys*, Pyralidae, Lepid.)

by

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With 33 figures

ABSTRACT

Thliptoceras anthropophilum sp. nov., *Thliptoceras umoremsugente* sp. nov., *Thliptoceras lacriphagum* sp. nov., *Thliptoceras shafferi* sp. nov., *Toxobotys boveyi* sp. nov. from N. Thailand, and *Hemiscopis sanguinea* sp. nov. also from W. Malaysia, are described. Adult male moths sucked perspiration from man, and/or variously other body fluids, such as lachrymation or wound exudates, from Indian elephant, Malayan tapir, water buffalo, zebu, and banteng.

INTRODUCTION

This is the third (previous: BÄNZIGER & FLETCHER 1985; BÄNZIGER 1985) of a series of papers describing new species of lachryphagous or otherwise zoophilous moth adults which trouble ungulates, proboscidiens, and occasionally man, by sucking various body fluids.

The six species treated here are interesting on two accounts. First, besides attacking animals they also settle on man, though they are by no means the first moths reported to do so. But, if the relatively small total number of specimens of *Thliptoceras anthropophilum* sp. nov. and *Toxobotys boveyi* sp. nov. observed is considered, they have apparently been

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found on man more often than any other lepidopteran. However, so far they have been observed to suck only perspiration, none having yet been seen to attack human eyes as some other Pyralidae do (BÄNZIGER 1966, 1973, in press; BÄNZIGER & BÜTTIKER 1969), though they occasionally imbibed lachrymation from animals.

Secondly, *Thliptoceras* species are the first pyralids for which the author found indication that females may also be zoophilous, albeit much less so than males. He found zoophily to be otherwise restricted exclusively to males in thousands of specimens of well over a hundred species of Pyralidae, Geometridae and Notodontidae with this feeding habit. In the Noctuidae there is the remarkable exception of the few species of *Arcyophora* Guenée and *Lobocraspis* Hampson in which also the females suck lachrymation and, significantly, they are predominant, at least in *L. griseifusa* Hampson. Previous reports that females of the pyralid *Pionea damastesalis* (Walker) sucked lachrymation on cattle in S. India and Sri Lanka are probably due either to sex misidentification, or to the possibility that the moths were not actually caught from this host (e.g. they were just accidentally flying nearby). The present author has always found only males of this species on mammals in Thailand, Indonesia, and Papua New Guinea.

In a systematic review of the genus *Thliptoceras* Warren, MUNROE (1967) listed 12 species (two of which, though, he assessed as dubious), described a new one, and pointed out several synonymies. Three more new species were added by MUNROE & MUTUURA in 1968, bringing the total to 16 species distributed from N. China and Japan to S. India, Burma, Thailand, Sumatra, Java, and Borneo. Of all these species the actual types or their illustrations, and/or their genitalia, were studied, except: *T. altheale* (Walker) and *T. fusco-ciliale* (Snellen) (besides the dubious ? *T. stygiale* Hampson and ? *T. calvatale* Swinhoe). No information on their habitus, nor about where the types are kept, is mentioned in the review.

From the collection of the British Museum (Natural History), London (BMNH), four species of *Hemiscopsis* Warren are known from N.W. India, Sri Lanka, Japan and Australia. They are all very different from the new species described here.

In *Toxobotys* only the type species *praestans* Munroe & Mutuura, 1968, is known, from Hainan, S. China.

Four new *Thliptoceras*, one new *Hemiscopsis* and *Toxobotys* are described and their feeding habits noted below, these being the first published reports of zoophily in the genera, except the following: a specimen of *Thliptoceras cascale* (Swinhoe) was captured whilst sucking at the eye of a sambar deer (*Cervus unicolor* Kerr) and another whilst flying around an Indian elephant (*Elephas maximus* L.) (BÄNZIGER 1973). However, more specimens of this as well as of other *Thliptoceras* species have since been observed sucking lachrymation and other body fluids from animals and man (in prep.).

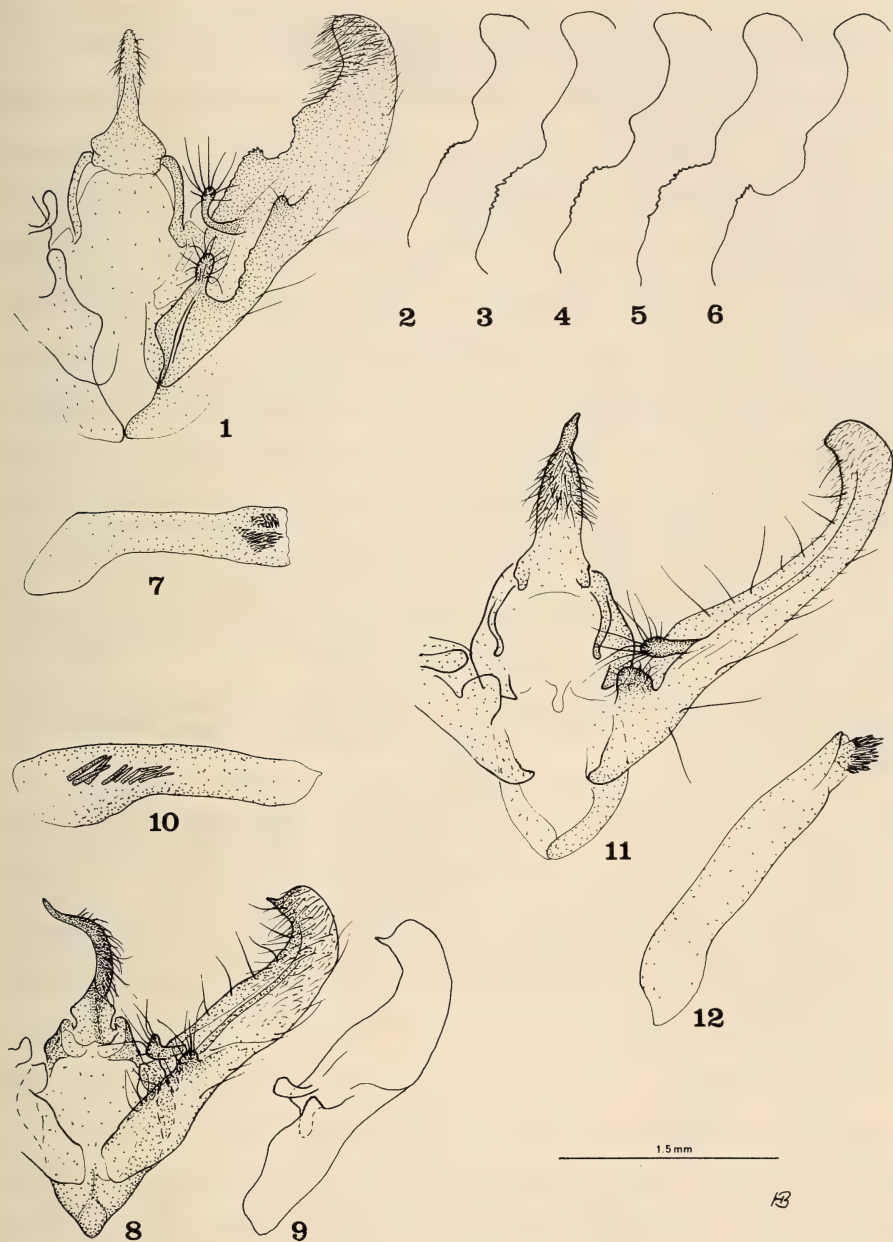
Type material is or will be deposited at the BMNH where the author carried out most of the identifications, at the Dept. Entomology, Fac. Agriculture, Chiangmai University (DEFACU), at the Muséum d'Histoire naturelle, Geneva, Switzerland (MHNG), and in the author's collection.

***Thliptoceras anthropophilum* sp. nov.**

Figs. 1-7, 22, 23, 32

Holotype. ♂, THAILAND: Chiangmai Prov., near road Chiangmai-Chiangdao, km 55, 380 m, 2.VI.1982, Bänziger leg., genitalia slide 1834 (DEFACU).

Paratypes. 18 ♂, ibid. and 400 m, 450 m, 500 m, 22.XI.1980, 13.V. and 28.XI.1981, 23.IV. and 24.IX.1983, 20.IV., 29.IV. and 27.VI.1984, all Bänziger leg., genitalia slides 1468



FIGS. 1-12.

Male genitalia. — 1-7: *Thliptoceras anthropophilum* sp. nov. (2-6: variations of valve's costa). — 8-10: *Thliptoceras lacriphagum* sp. nov. (9: variation of valve). — 11-12: *Thliptoceras shafferi* sp. nov.

(at present on loan with Mr. E. Munroe, Canada, to be deposited at the BMNH), 1835 (BMNH), 1711 (DEFACU), 1838 (MNHG), 776, 1551, 1603, 1667-1669, 1692, 1712, 1737, 1738, 1740, 1741, 1832, 1839 (Bänziger coll.).

Derivation of name: The species is named after one of its most remarkable behavioural patterns, i.e. to have a liking for man.

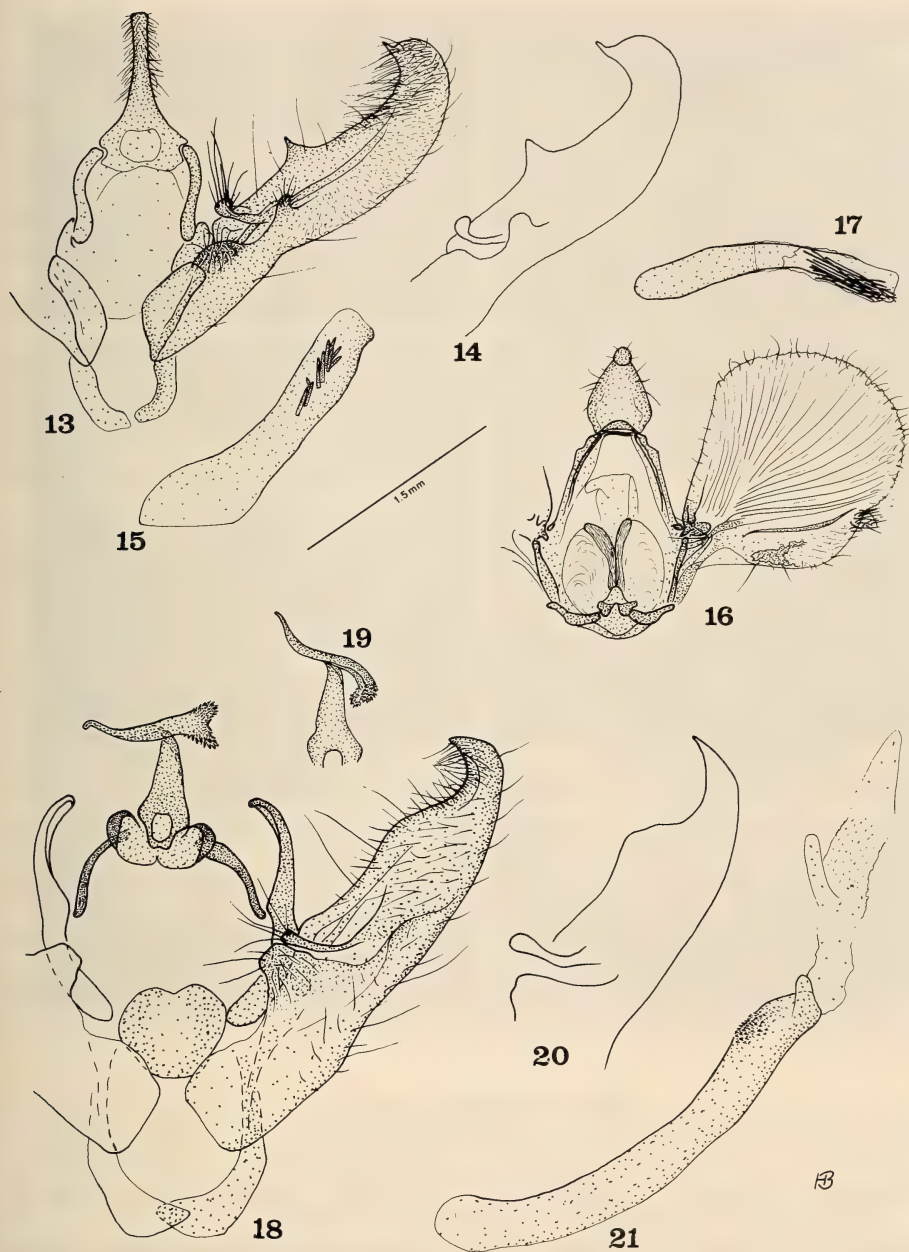
Diagnosis: Closest to *T. umoremsugente* sp. nov. from which it can be distinguished safely only by the genitalia as mentioned below. The wingspan is slightly smaller, the coloration somewhat darker, and the tendency of the dots of the postmedial line to fuse is greater than in *T. umoremsugente*. Also similar to *T. shafferi* sp. nov. and *T. lacriphagum* sp. nov. but both are of less greyish, more yellowish or more brownish coloration, the postmedials are more like undulating lines, and the genitalia are clearly distinct.

Description: Male (Figs. 22, 23). Wingspan 19-22.5 mm, $\emptyset = 21.3$ mm, $n = 12$. Head, thorax, abdomen, antenna, palpus, proboscis and legs as in *Mabra lacriphaga* Bänziger (1985), though coloration somewhat darker. Wings upperside light yellow to greyish yellow, with greyish shadows; fringes grey. On the fore wing only the postmedial line is evident, composed of a string of dots, more or less partly fused with each other; it starts at the costa and is first straight then curved inwardly, disappearing near the inner margin. Reniform mostly quite evident, with a rather less clear dot somewhat proximally of it. Along the inner margin there is a flap with modified, broad scales arranged obliquely upwards, comparable to those mentioned in *T. fimbriatum* (Swinhoe) and *T. amamiale* Munroe & Mutuura (MUNROE & MUTUURA 1968). Hind wing only with postmedial evident, curved inwardly except shortly before disappearing, towards the tornus, where it turns outwardly. Wings underside pale greyish with a slightly metallic shine, hind one somewhat lighter; lines as on upperside but more diffuse and less evident.

Female. The only specimen caught cannot be attributed with certainty to this or the following species as the facies of both are exceedingly similar and all come from the same locality.

Male genitalia (Figs. 1-7). Not particularly close to any *Thliptoceras* known to the author though they are related to those of the other *Thliptoceras* described here. Characteristic is the relatively broad valve (though less so than in *T. fimbriatum* and *T. amamiale*), recurved distad at apex, expanded towards the middle with costa deeply excavated and with some saw-like crenatures proximally to it. Ampulla finger-like, widely recurved dorsad. Sacculus broad basally, with process expanded distally, deeply excavated in the center and again broad distally, with process. Aedeagus with two patches of cornuti.

Biology: Immatures unknown. Males are zoophilous: 5 specimens sucked perspiration from the skin of the author and 2 from his clothes and those of his Karen assistant; 2 specimens sucked lachrymal fluids near the eye of Indian elephants (Fig. 32); another 7 flew around elephants or sucked its body fluids from the vegetation onto which they had been smeared. One female of this or the following species was caught while presumably sucking lachrymal fluid flowing down the cheek of an elephant. However, the author had no chance to determine unequivocally whether the female did really suck tears or just settled there for a rest. Also, one single record is not enough to make sure that the event was not a case of an accidental feeding act, though additional cases involving two *T. cascale* (Swinhoe) females, and one female of what may be a *Toxobotys* sp. different from *boveyi* sp. nov., exhibiting zoophilous behaviour were also observed (in prep.).



FIGS. 13-21.

Male genitalia. — 13-15: *Thliptoceras umoremsugente* sp. nov. (14: variation of valve). — 16-17: *Hemiscopsis sanguinea* sp. nov. — 18-21: *Toxobotys boveyi* sp. nov. (19: variation of uncus; 20: variation of valve).

***Thliptoceras umoremsugente* sp. nov.**

Figs. 13-15, 24, 25

Holotype. ♂, THAILAND: Chiangmai Prov., near road Chiangmai-Chiengdao, km 55, 400 m, 13.V.1981, Bänziger leg., genitalia slide 1671 (DEFACU).

Paratypes. 8 ♂, *ibid.* and 380 m, 420 m, 500 m, 13.V. and 8.VIII.1981, 16.IX.1983, 27.VI.1984, genitalia slides 1627 (at present on loan with Mr. E. Munroe, to be deposited at the BMNH), 1833 (BMNH), 1837 (MHNG), 778, 1590, 1670, 1739, 1836. 1 ♂, Lampang Prov., Thoen Distr., Ban Rin, 15.-21.XI.1965, all Bänziger leg., genitalia slide 344 (Bänziger coll.).

Derivation of name: The species is named after one of its feeding habits, i.e. the sucking of body fluids.

Diagnosis: Closest to *T. anthropophilum* sp. nov. from which it can be distinguished safely only by the genitalia as mentioned below. The wingspan is slightly larger, the coloration somewhat lighter, and the tendency of the dots of the postmedial line to fuse is slightly less than in *T. anthropophilum*. Also similar to *T. shafferi* sp. nov. and *T. lacriphagum* sp. nov. but both are of rather more yellowish coloration besides having different genitalia.

Description: Male (Figs. 24, 25). Wingspan 22-24 mm, $\emptyset = 22.8$ mm, $n = 8$. Habitus as mentioned for *T. anthropophilum*, with the minor differences as mentioned in the diagnosis.

Female. See comment for the preceding species.

Male genitalia (Figs. 13-15). General shape related to *T. anthropophilum* and *T. lacriphagum* but uncus abruptly truncate at apex (drawn out or bluntly pointed in the other two). Costa of valve neither expanded nor excavated at middle (as in *T. anthropophilum*) but with a triangular shaped extension there (missing in the other two). Ampulla shorter than in *T. anthropophilum* but less so than in *T. lacriphagum* and more strongly widened at end; basal extension of sacculus very broad, excavation shallow (both missing in *T. lacriphagum* but both very prominent in *T. anthropophilum*). Apex of valve with a pointed extension (missing in the other two). Aedeagus with fewer, larger cornuti than in *T. anthropophilum*. *T. shafferi* has a much narrower and simpler valve besides other differences.

Biology: Immatures unknown. Males are zoophilous: 5 specimens sucked perspiration from the skin of the author; one specimen sucked lachrymation at the eye of, 2 flew nearby, and another took anally-exuded blood-droplets of mosquitoes on elephants, and another did so on water buffalo. About female zoophily see comment for the preceding species.

***Thliptoceras lacriphagum* sp. nov.**

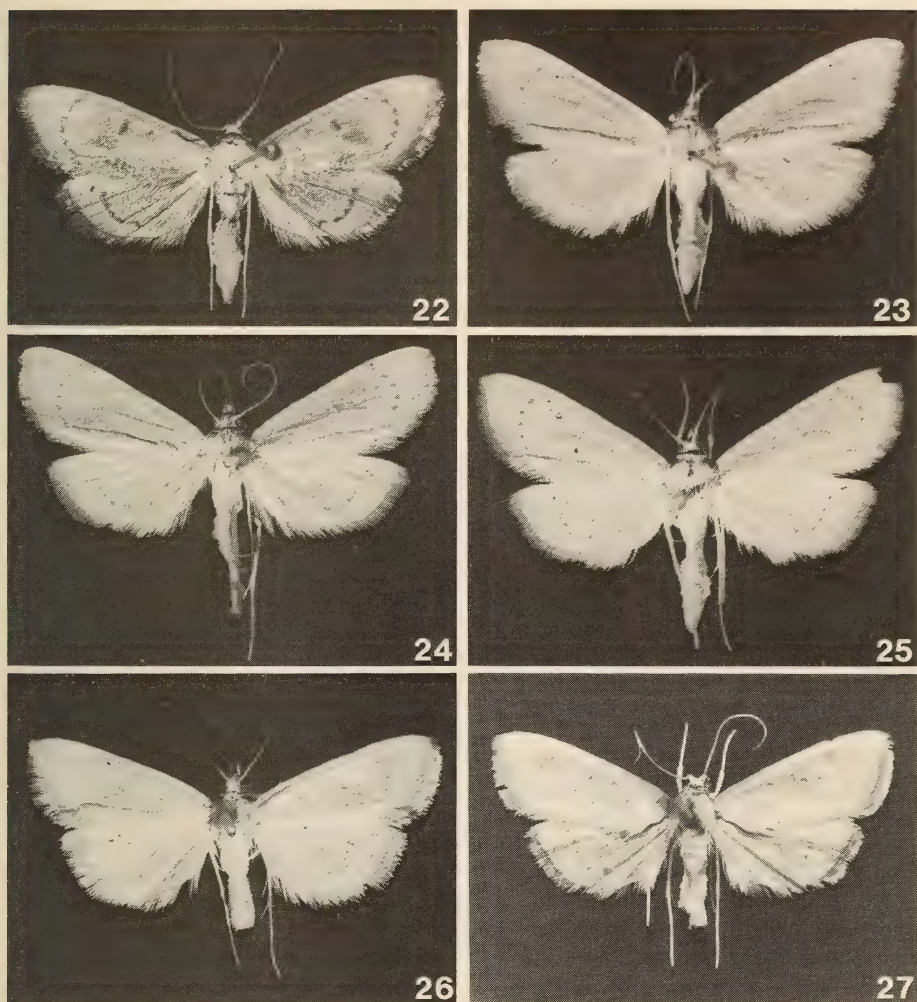
Figs. 8-10, 26

Holotype: ♂, THAILAND: Chiangmai Prov., near road Chiangmai-Chiengdao, km 55, 400 m, 13.V.1981, Bänziger leg., genitalia slide 777 (BMNH).

Paratype. ♂, THAILAND: Chiangmai Prov., Huay Kao, Chiangmai Distr., 350 m, 2.X.1973, Bänziger leg., genitalia slide 548 (Bänziger coll.).

Derivation of name: The species is named after one of its feeding habits, i.e. the feeding upon lachrymal secretion.

Diagnosis: Externally it cannot be distinguished safely from *T. shafferi* sp. nov. Wing line pattern very close to *T. fimbriatum* (Swinhoe) and *T. decolorale* (Warren) but colour



FIGS. 22-27.

22-23: Male *Thliptoceras anthropophilum* sp. nov. (22: holotype; 23: paratype, genitalia slide 1838). — 24-25: Male *Thliptoceras umoremsugente* sp. nov. (24: paratype, genitalia slide 1590; 25: paratype, genitalia slide 1836). — 26: Male *Thliptoceras lacriphagum* sp. nov., holotype. — 27: Male *Thliptoceras shafferi* sp. nov., holotype.

above yellow (orange in the first and dark brown in the latter). Also related to *T. anthropophilum* sp. nov. and *T. umoremsugente* sp. nov. with which it shares the flap with modified scales along the inner margin of the fore wing, but the two are more greyish brown. The genitalia are very different as mentioned below.

Description: Male (Fig. 26). Wingspan 20-21 mm. Body, antenna, palpus, proboscis and legs as in *T. anthropophilum* though what is greyish in this species is more yellowish or

dark yellowish in *T. lacriphagum*, especially the wings. Fore wing reniform is an oblique streak, narrower and longer than in the other two species. Postmedial, also on hind wing, consisting of an undulating line, arranged as in the above described species. Fringes dark grey. Wings underside light yellowish, the postmedials only vaguely apparent.

Female. Unknown.

Male genitalia (Figs. 8-10). The sacculus is the least complex and the ampulla the shortest of all *Thliptoceras* described here. The valve's costa is straight (complex in *T. anthropophilum* and *T. umoremsugente*) as in *T. shafferi* but much less narrow than in this which also lacks the apical thorn-like extension present in *T. lacriphagum* (and *T. umoremsugente*). Related also to *T. decolorale* but in this the ampulla is long and slender, there is a triangular prominence on the sacculus, and the subapical excavation of the costa is complex. In *T. fimbriatum* the valve is very broad and not curved inwardly.

Biology: Immatures unknown. One male sucked lachrymation from the eye of a zebu (*Bos indicus* L.) while another imbibed an elephant's skin secretions smeared onto the vegetation.

***Thliptoceras shafferi* sp. nov.**

Figs. 11, 12, 27, 33

Holotype. ♂, THAILAND: Chiangmai Prov., Huay Kaeo, Chiangmai Distr., 350 m, 28.VIII.1981, Bänziger leg., genitalia slide 883 (at present on loan with Mr. E. Munroe, to be deposited at the BMNH).

Derivation of name: The species is named after Mr. M. Shaffer in recognition for his crucial help to the author.

Diagnosis: Externally it cannot be distinguished from *T. lacriphagum* sp. nov. though it would seem to be slightly larger if a single specimen can be taken as a general measure.

Description: Male (Figs. 27, 33). Wingspan 22.5 mm. Habitus as mentioned for *T. lacriphagum*.

Male genitalia (Figs. 11, 12). Valve very narrow except towards the apex where it widens and then turns inwardly, without a thorn-like extension at apex. Ampulla finger-like, straight and thick (thinner and/or recurved in the three species described above); sacculus basally with a subtriangular process. Uncus much broader than in the three species mentioned, and even more so than in *T. decolorale* (Warren) which has quite similar genitalia otherwise.

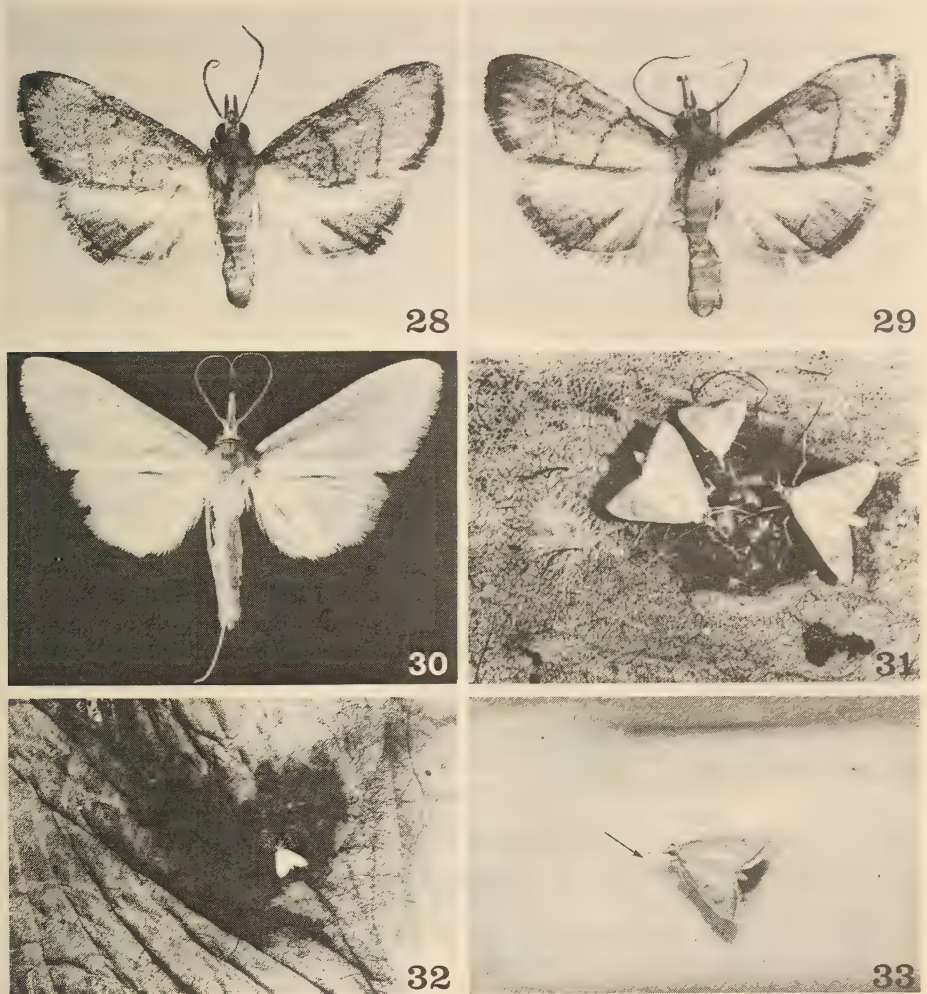
Biology: Immatures unknown. The only adult male known so far sucked perspiration on the arm of the author (Fig. 33).

***Hemiscopsis sanguinea* sp. nov.**

Figs. 16, 17, 28, 29

Holotype. ♂, THAILAND: Chiangmai Prov., Doi Suthep, Khonthatharn Waterfall, 660 m, 10.XII.1985, Bänziger leg., in DEFACU.

Paratypes. 4 ♂, *ibid.*, genitalia slide 2038 (BMNH, MHNG, Bänziger coll.); 7 ♂, *ibid.* but near road Chiangmai-Chiangdao, km 55, 380 m, 400 m, 28.XI.1980, 14.III. and 28.XI.1981, 16.IX.1983, genitalia slide 2052 (BMNH and Bänziger coll.); 4 ♂, *ibid.* but Chiangmai Distr., Huay Kaeo, 350 m, 11.XII.1972 and 19.V.1973, genitalia slides 535, 536; 1 ♂, *ibid.* but Chiangdao Distr., Pa Kia, 1560 m, 3.XI.1980; 1 ♂, *ibid.* but NW Pass, Doi Chiangdao, 1150 m, 2.IV.1986, genitalia slide 2114. 1 ♂, MALAYSIA: Perak State, Taiping, 22.XII.1971, all Bänziger leg., genitalia slide 2053, in Bänziger coll.



FIGS. 28-33.

28-29: Male *Hemiscopsis sanguinea* sp. nov. (28: paratype, N. Thailand, 28.XI.1981; 29: paratype, W. Malaysia, 22.XII.1971). — 30: Male *Toxobotys boveyi* sp. nov., paratype, genitalia slide 1270. — 31: Two male *Toxobotys boveyi* sp. nov. (paratypes, genitalia slides 1269, 1270) sucking exudates at a purulent sore (dark, round area) on the belly of an elephant, as also does the small pyralid, either a *Mabra elephantophila* Bänziger or a *M. lacriphaga* Bänziger. — 32: Male *Thliptoceras anthropophilum* sp. nov. (paratype, genitalia slide 1551) below the eye (beyond upper left corner) of an elephant where it sucks lachrymation (dark area) flowing down the cheek. — 33: Male *Thliptoceras shafferi* sp. nov. (holotype) sucking perspiration on the forearm of the author; arrow showing the licking proboscis.

Derivation of name: The name alludes both to its red coloration as well as to one of the moth's feeding habits, i.e. to imbibe blood.

Diagnosis: With its deep red wing colour the species is very characteristic, the other known species of the genus, *H. violacea* (Lucas), *H. suffusalis* (Walker), *H. cinerea* Warren, *H. expansa* Warren, being brownish grey with or without violet shine.

Description: Male (Figs. 28, 29). Wingspan 15.5-17.5 mm, $\varnothing = 16.2$ mm, $n = 6$. Head, palpus — which is nearly twice as long as the eye diameter — thorax above dark red, below silvery white; antenna dark above, brown below. Abdomen above with brownish and reddish scales, below silvery white for nearly 2/3, dark brown on apical 1/3. Legs greyish above, silvery white below. Fore wing upperside dark red with strong metallic shine (cf. Figs. 28, 29), darker toward the outer margin, where it is suffused with grey. Antemedial and postmedial are barely visible to distinct and well defined, though very narrow, dark lines arranged as shown in Fig. 29. Fringes grey to black. Reniform a minute streak. Hind wing coloration as fore wing except the basal 1/3 to 2/3 which are whitish. Of the postmedial there remains only a short central streak, if at all. Wings underside pale near the inner margin of the fore wing and basally of hind wing, remainder greyish; postmedial rather more apparent on hind wing, as may also be the case with the reniform.

Male genitalia (Figs. 16, 17). Characteristic is the unusual shape of the valve, fan-like, only little sclerotized basally. Uncus broad, juxta roundish, centrally with two elongate sclerotized structures. Aedeagus distally with strong bristle-like structures externally. The genitalia of the other *Hemiscopsis* sp. were not available for comparison.

Biology: Immatures unknown. Males are zoophilous: 2 specimens sucked perspiration from the author's skin, 2 from his clothes; one imbibed lachrymation from below an elephant's eye, 3 imbibed elephant skin secretions smeared onto the vegetation, 3 flew around elephants and one around a banteng (*Bos javanicus* d'Alton), and 2 sucked skin secretions directly on the body of Malayan tapirs (*Tapirus indicus* Desmarest).

***Toxobotys boveyi* sp. nov.**

Figs. 18-21, 30, 31

Holotype. ♂, THAILAND: Chiangmai Prov., near road Chiangmai-Chiangdao, km 55, 380 m, 2.VI.1982, Bänziger leg., genitalia slide 2083 (BMNH).

Paratypes. 10 ♂, *ibid.* and 420 m, 500 m, 680 m, 26.X.1980, 14.X.1981 (DEFACU), 28.XI.1981, 2.VI. and 10.VII.1982, 23.IV. and 5.XI.1983, all Bänziger leg., genitalia slides 1269 (at present on loan with Mr. E. Munroe, to be deposited at the BMNH), 2046 (MHNG), 1270, 1557, 2055, 2056 (in Bänziger coll.).

Derivation of name: The species is named after Prof. Dr. P. Bovey in recognition for his dedication to Entomology.

Diagnosis: According to Mr. M. Shaffer, the wing pattern cannot be distinguished from the only other described species of the genus, *T. praestans* Munroe & Mutuura, the genitalic differences being as noted below.

Description: Male (Fig. 30). Wingspan 27-29 mm, $\varnothing = 27.9$ mm, $n = 8$. The external features of *T. praestans*, which do not seem to differ from *T. boveyi*, have been described in detail by Munroe & Mutuura (1968); they are, therefore, not repeated here. The wing pattern is as in Figs. 30, 31.

Female unknown.

Male genitalia (Figs. 18-21). Close to *T. praestans* but valve more distally excavated and tip not rounded but ending in a more or less acuminate point. Uncus with a rather broader

base and broader basal appendages; the bi-lobed spiny dorsal portion of the uncus is somewhat longer than in *T. praestans*; the juxta is more rounded. The aedeagus is denticulated subapically.

Biology: Immatures unknown. Adult males are zoophilous: 5 specimens sucked perspiration from the author's arms, hands or clothes, 2 sucked at a sore on an elephant (Fig. 31), 4 imbibed skin secretions from an elephant, or tried to do so.

Comment: Due to *T. boveyi*'s similarity to *T. praestans* the former may be no more than a subspecies of the latter, but until more material can be studied, Mr. Shaffer concurred with the author that it is better to consider them as different species.

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REFERENCES

- BÄNZIGER, H. 1966. First records of eye-frequenting Lepidoptera from man. *World Health Organization, Geneva. WHO/EBL/66*. 81: 1-13.
- 1973 (1972). Biologie der lacriphagen Lepidopteren in Thailand und Malaya. *Revue suisse Zool.* 79: 1381-1469.
- 1985. Description of three new lachryphagous moths of the genus *Mabira* from Thailand, Malaysia, and China (Lepidoptera: Pyralidae). *Mitt. schweiz. ent. Ges.* 58: 23-30.
- (in press). Lachryphagous Lepidoptera recorded for the first time in Indonesia (Sumatra) and Papua New Guinea. *Heteroc. Sumatr.*
- BÄNZIGER, H. & W. BÜTTIKER. 1969. Records of eye-frequenting Lepidoptera from man. *J. med. Ent.* 6: 53-58.
- BÄNZIGER, H. & D. S. FLETCHER. 1985. Three new zoophilous moths of the genus *Scopula* from South East Asia (Lepidoptera: Geometridae). *J. nat. Hist.* 19: 851-860.
- MUNROE, E. 1967. A new species of *Thliptoceras* from Thailand, with notes on generic and specific synonymy and placement and with designations of lectotypes (Lepidoptera: Pyralidae). *Can. Ent.* 99: 721-727.
- MUNROE, E. & A. MUTUURA. 1968. Contributions to a study of the Pyraustinae (Lepidoptera: Pyralidae) of temperate Asia. II. *Can. Ent.* 100: 861-868.